

### PHYSICAL FITNESS FOR SPORT

Watson, A. W. S.

University of Limerick, Ireland

Physical fitness allows the athlete to meet the demands made by their particular sport. This includes both attaining a high level of performance and reducing the risk of injury. The principle physiological components of physical fitness include: - strength, flexibility, endurance, low body fat, good posture. Good physical fitness depends on both (1) an effective training programme (2) freedom from defects such as: - cardiovascular problems, anaemia, poor lung function, poor or uneven muscle development, weak joints, other joint problems, poor joint proprioception, incomplete recovery from a previous injury, poor diet. The physiotherapist has an important role to play in detecting and correcting such problems in athletes. Training increases physical fitness by bringing about physiological changes in the body by a process known as **ADAPTATION**. Such changes include increasing the concentration of key enzymes and other body chemicals, increasing blood volume and muscle bulk. Only certain kinds of training are effective. Parameters of training that influence the outcome include: - **INTENSITY, FREQUENCY, DURATION, LENGTH** and **MODE**. For example, swim-training has been shown to increase VO<sub>2</sub>max measured during swimming but has no effect on VO<sub>2</sub>max measured during running. Training must be undertaken scientifically if it is to be effective. Many athletes undertake training that is ineffective. Some has no effect at all. Other training may be harmful because it reduces performance or increases the risk of sports injury. Over-training is recognised as a common cause of sports injury. Physiotherapists have an important role to play in ensuring that the training of athletes is safe and effective.

### THE PROBLEM OF SPORTS INJURIES

Watson, A. W. S.

University of Limerick, Ireland

Injuries are a serious, and growing, problem in sport. Physiotherapists need to know how sports injuries are quantified in order to be able to direct injury prevention measures to athletes who are at high risk. Many older studies on injuries were poorly designed, based only on hospital records, and gave a misleading impression of which injuries were most common. Studies on the incidence of injury should be **prospective** and follow athletes in their clubs or at home using telephone or postal surveys. Incidence should be expressed per 10,000 hours of participation. The seriousness of injury should be expressed as days of injury per 1000 hours of participation. The risk and most common type of injury depends upon the following factors: - age and gender of the athlete, type and level of sport, match or practice. In school sport, injuries due to contact with other players and falling over are the most common (fractures, sprains, contusions) while in club and elite sport there is a higher incidence of strains and overuse injuries. The incidence of strains and overuse injuries also increases with age. In Ireland sportsmen and women sustain 2.1 sports injuries per year and are incapacitated for 52 days or 14% of the year (Watson 1993). Data for sports injuries and fatalities in the UK are given in Table 1. (Nicholl et al, 1991)